DOCKET NO. 119464
Serial No. 10/019,161
Amendment in response to Office Action of Jan. 7, 2004

REMARKS

Claims 1 to 20 are in the case.

In paragraphs 1 of the Final Rejection, the amendment was objected to as containing new matter not supported by the original disclosure, i.e., "the absence of conventional accessory surfactant." Applicants proposed to amend claim 1 by deleting the word "accessory," so as to make the claim consistent with the specification where the phrase "the absence of conventional surfactant" is supported at page 6, line 9. Entry of the amendment and reconsideration and withdrawal of this objection is requested. The amendment was not previously presented because the absence of conventional accessory surfactant limitation was added for the first time in the last amendment and the new matter objection was not made until the Final Rejection. No new issues are presented by this amendment, and since the amended phrase is fully supported by the specification, one issue is eliminated by the proposed amendment.

In paragraph 3, claims 1-15 were rejected under 35 U.S.C. 112 for lack of original support for the same term, i.e., "the absence of conventional surfactant." Again, page 6, line 9 supports said phrase and said concept.

On paragraph 4, the claims were rejected as vague and indefinite as to what is considered by the term "conventional." It would have been very clear to those skilled in this art what the specification meant in view of page 4, line 18 to page 5, line 19. Any person skilled in this art would have known the type of "conventional" surfactants required by Verdol, et al's examples and disclosure and as disclosed by applicants to be excluded. If a declaration by an independent person skilled in this art would be of assistance to the examination of this application with respect to the definiteness of this phrase, the Examiner is requested to inform the undersigned.

Claim 20 was rejected in paragraph 5 of the Final Rejection as anticipated under 35 U.S.C. 102 by Verdol, et al. for the reason that "[t]his rejection is set forth in the prior Office action mailed on July 25, 2003." This rejection appears to be in error because there was no rejection of claim 20 under 35 U.S.C. 102 in the July 25, 2003 Office Action. The only claims rejected under 35 U.S.C. 102 were claims 1-15. No further explanation of how Verdol would anticipate claim 20 is set forth in the current Office Action. Claim 20 requires a component, starch, which is not taught by Verdol, et al., and so the rejection of claim 20 should be withdrawn.

Claims 1-15 were also rejected in paragraph 5 as anticipated under 35 U.S.C. 102 by Verdol, et al. This rejection depends on the failure to consider the limitation to "the absence of conventional surfactants" introduced by the previous amendment on the incorrect ground that such exclusion constitutes new matter (paragraph 7 of the Final Rejection, page 4, line 4, reason "a)." Contingent reason b), that Verdol et al discloses the use of conventional surfactants as being optional, does not anticipate the invention. To anticipate the invention, Verdol would have to have disclosed excluding such conventional surfactants, rather than saying "In many cases it is desirable to add accessory emulsifiers or protective colloids . . . [t]he type of accessory emulsifier may vary widely . . .[w]hen employed, the accessory emulsifiers are usually present in an amount of about 0.1 to about 5% by weight, based on the monomers." If I tell my child that "in many cases it is desirable for you to eat candy, and when eating candy you should eat 1 to 5 pieces," is that the same, in the sense of anticipating under 35 U.S.C. 102, as saying "you are not allowed to eat any candy"? The Examiner is correct in that Verdol, et al., did not "require" the accessory emulsifiers, but the language used, the context, and the fact that all examples included them, together would not be understood by those skilled in this art as disclosing "the absence of." In addition, there is no any trace of experimental evidence by Verdol that the latex (aqueous polymer dispersion) itself is feasible in the absence of such a conventional surfactant in the range claimed by the present invention. Consequently Verdol, et al. can not be cited as an anticipation of the claimed process for producing an aqueous cationic dispersion or the compositions produced by said process of the present invention.

Furthermore, claims 1-15 and 20 were not rejected under 35 U.S.C. 103 --- because the composition as claimed is not obvious over Verdol, et al. and so if the phrase "the absence of conventional surfactants" is given the weight intended by applicants' original disclosure which contained applicants' original and present contention as to why Verdol, et al. does not anticipate or render their invention obvious, then the rejection under 35 U.S.C. 102 should be withdrawn and no rejection under 103 should be instituted.

Claim 16 to 19 were rejected as unpatentable over Verdol, et al., under 35 U.S.C. 103. In response to applicants' argument that it would not have been obvious to emulsion polymerize at a temperature ranging from 30 to 100°C one or more monomers in the presence of 30 to 50% by weight, with respect to the one or more monomers, of a surfactant consisting of imidized

styrene/maleic anhydride copolymer, the solids content of the dispersion being 20 to 50%, and to use the resulting composition as a sizing agent for sizing paper, the PTO held that "Verdol et al., teach [such a] composition could be used as a paper coating or for textile sizing[, and that textile] [s]izing is a coating process, either to the formed surface sizing or internally coating the papermaking fibers, internal sizing." The PTO further held that Verdol et al.

> "teach that the composition can be used for sizing textiles, which fibers are usually Cellulosic or derived from cellulose, e.g., rayon. One of ordinary skill in the art would realize the similarity of the sizing process in both the papermaking and the textile making operations. Sizing agents used in textiles are usually used in the papermaking and vice versa."

In the Office Action of July 25, 2003, the PTO acknowledged that Verdol, et al., do not teach any sizing agents used in papermaking, but held that the compositions disclosed by Verdol, et al. have water repellant characteristics and use as a paper coating was taught by Verdol et al.

Broad and general teaching of Verdol on paper coating can not and should not be extrapolated to a very specific use as internal or external sizing agent for paper or boards, where more specific conditions of use than simple coating are required for the final end-use, particularly in ink printing: compatibility, adherence of inks, with good surfacant properties for obtaining printability. The absence of any conventional surfactant is one of the key features of the present invention.

Verdol, et al., disclose using an amount of nitrogen-containing styrene-maleic anhydride emulsifier in the broad range of 0.1 to 50%, with a preferred range of 2 to 20% by weight based on monomers, and do not disclose applicants' range of 30-50% by weight. Verdol, et al., also fail to teach or suggest the advantages applicants have discovered in using the 30-50% range of imidized styrene-maleic anhydride emulsifier, absence of conventional surfactants, and the use as a sizing agent for paper. On the contrary Verdol specifically teaches a specific preference of using a combination of a polymeric and conventional surfactant for overcoming dispersion stability problems. Such a strong teaching is also present in all the examples of Verdol, et al., where no suggestion is made of using only a polymeric surfactant (feasibility evidence without

conventional surfactant obviously lacking from Verdol). Consequently the compositions for paper sizing comprising a cationic dispersion according to the present invention not only are not disclosed as such by Verdol but in addition they cannot be obvious over Verdol's broad general teaching on possible (neither specific disclosure nor specific demonstration) use in paper coating.

There are many types of polymers which have water repellant characteristics, but an extremely small percentage of such water repellant polymers can be used successfully as paper sizing agents. Such agents require very special properties and the mere fact that a polymer is known to be water repellant would not be enough to cause one of normal skill in this area to expect it to be useful as a paper sizing agent. The composition and process of using them of the present invention are unobvious because the use of the novel compositions in paper applications where starch and pigments and ink-jet printability and ink adherence are important requirements, and the fact that the cationic nature of the polymers causes them to attach more easily to generally anionic printing inks, as pointed out at page 10, lines 14-24, are all factors which are important in this art (paper sizing) and are not taught or even remotely suggested by Verdol, et al.

More particularly, applicants have demonstrated unexpected results. It would have been expected that a well known paper sizing agent, comparative example S-4, would have had the same performance as a sizing agent as the paper sizing agent of the invention. Surprisingly, the paper sizing agent of the present invention exhibited improved properties when compared with well known paper sizing agents of prior art. In fact the paper sizing agent of the present invention does demonstrate unexpectedly improved paper sizing performances for specific paper requirements (jet ink printability, ink adherence on writing and printing paper) in very broad and difficult operating sizing conditions not met by well known sizing paper agents and not at all taught by Verdol.

There are differences in the art of textile sizing and paper sizing. Paper making requires severe high temperature and shear gradient conditions on paper presses under which the dispersion of the invention must be stable. Verdol, et al., teach textile sizing but not paper sizing, and it would not be expected by those skilled in the paper sizing art that a textile sizing agent would necessarily be useful. See p. 4 lines 9-11 of specification as filed regarding high temperature stability.

Attention is directed to the comparative examples wherein a conventional anionic emulsion disclosed and widely used in the prior art for paper sizing agents, as represented by S4 (see pg. 14, ll. 20-26) is compared with the cationic equivalent of the invention. The Cobb test, as described at pg. 15 , l. 24 to pg. 16, l. 2, and the HST test, described at pg. 16, ll. 2-11, were used to determine superiority among the prior art and inventive compositions, each comprising emulsion and starch.

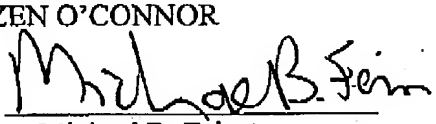
The emulsion/starch paper sizing agents of the invention, represented by S3-1, performed consistently better than the corresponding anionic equivalent, S-4, in all of the tests as reported in Examples A1, A2, A3, and A4, and the tables in each of said examples: sizing agent of the present invention suitable in a broad range of operating conditions, such as suitable with both anionic and cationic starches, high surface and internal sizing efficiency, with so high an efficiency that surface sizing can be sufficient for printability without an internal sizing required, and thereby more cost-effective. So it cannot be concluded that one skilled in the art would have expected the dispersion from Verdol, et al., (already different, as exemplified, from the dispersion of the present invention) to be suitable for paper sizing, with unexpected performances under the severe conditions shown by the present invention.

These comparative experiments are the most appropriate and most fair comparison to the most relevant paper sizing prior art, i.e. the corresponding anionic emulsions with starch. Verdol, et al., was not deemed as close as the corresponding anionic emulsions because Verdol, et al., do not teach paper sizing. Verdol's teaching of paper coating and textile sizing is not a teaching of paper sizing. The closest prior art is emulsions which were known to be useful in paper sizing, which is a separate art from that of textile sizing. It is less likely that one skilled in the art would turn to a textile sizing agent when seeking a paper sizing agent which can provide high efficiency, avoiding internal sizing, avoiding spreading of ink, improving printability, especially with ink jet ink. On the contrary, that skilled artisan would have turned to the known paper sizing agents and would probably have chosen the anionic one represented by S-4. Nothing in Verdol, et al., would have taught or led that skilled artisan to make the cationic surfactant/starch combination of the invention.

Therefore the invention set forth in claims 16-19 is not obvious over Verdol, et al. For these reasons, reconsideration and withdrawal of all grounds of rejection and an early notice of allowance are respectfully requested.

Respectfully Submitted,

COZEN O'CONNOR

By: 
Michael B. Fein
Reg. No. 25,333

Cozen O'Connor
The Atrium
1900 Market Street
Philadelphia, PA 19103
(215) 665-4622(v)
(215) 701-2246 (f)
mfein@cozen.com